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Claims

1. An aqueous ink composition for the ink-jet printing method, which comprises
 - a) metallic or non-metallic, inorganic platelet-shaped particles having an average particle diameter of at least 2 μm ,
 - b) a dispersant (dispersing agent) and
 - c) a binder
2. An aqueous ink composition according to claim 1, wherein the platelet-shaped particles are aluminium flakes.
3. An aqueous ink composition according to claim 1, wherein the platelet-shaped particles are aluminium flakes coated with SiO_z wherein $0.95 \leq z \leq 2.0$, especially $1.1 \leq y \leq 2.0$, more especially $1.4 \leq y \leq 2.0$.
4. An aqueous ink composition according to claim 1, wherein the platelet-shaped particles are pigments that comprise
 - (a1) a core consisting of a substantially transparent or metallicity reflecting material and
 - (a2) at least one coating substantially consisting of one or more silicon oxides (SiO_x layer) wherein the average molar ratio of oxygen to silicon is from 0.03 to < 0.95 .
5. An aqueous ink composition according to claim 4, wherein the pigment has the following layer structure:
 - (a3) SiO_z , especially SiO_2 ,
 - (a2) at least one coating substantially consisting of one or more silicon oxides wherein the average molar ratio of oxygen to silicon is from 0.03 to < 0.95 ,
 - (a1) a core consisting of a substantially transparent or metallicity reflecting material, and
 - (a2) at least one coating substantially consisting of one or more silicon oxides wherein the average molar ratio of oxygen to silicon is from 0.03 to < 0.95 ,
 - (a3) SiO_z , especially SiO_2 , or
 - (a4) a coating consisting of any desired solid material the composition of which is different from that of the coating (a3),
 - (a3) SiO_z , especially SiO_2 ,

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(a2) at least one coating substantially consisting of one or more silicon oxides wherein the average molar ratio of oxygen to silicon is from 0.03 to < 0.95 ,

(a1) a core consisting of a substantially transparent or metallically reflecting material, and

5 (a2) at least one coating substantially consisting of one or more silicon oxides wherein the average molar ratio of oxygen to silicon is from 0.03 to < 0.95 ,

(a3) SiO_z , especially SiO_2 ,

(a4) a coating consisting of any desired solid material the composition of which is different from that of the coating (a3).

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6. An aqueous ink composition according to claim 5, wherein the gloss pigment has the following layer structure: $\text{SiO}_x/\text{SiO}_z/\text{SiO}_x$, $\text{SiO}_z/\text{SiO}_x/\text{SiO}_z/\text{SiO}_x/\text{SiO}_z$, especially $\text{SiO}_2/\text{SiO}_x/\text{SiO}_2/\text{SiO}_x/\text{SiO}_2$, $\text{SiO}_x/\text{Al}/\text{SiO}_x$, $\text{SiO}_z/\text{SiO}_x/\text{Al}/\text{SiO}_x/\text{SiO}_z$, especially $\text{SiO}_2/\text{SiO}_x/\text{Al}/\text{SiO}_x/\text{SiO}_2$, $\text{TiO}_2/\text{SiO}_z/\text{SiO}_x/\text{SiO}_z/\text{SiO}_x/\text{SiO}_z/\text{TiO}_2$, especially $\text{TiO}_2/\text{SiO}_2/\text{SiO}_x/\text{SiO}_z/\text{SiO}_x/\text{SiO}_2/\text{TiO}_2$ or $\text{TiO}_2/\text{SiO}_z/\text{SiO}_x/\text{Al}/\text{SiO}_x/\text{SiO}_z/\text{TiO}_2$, especially $\text{TiO}_2/\text{SiO}_2/\text{SiO}_x/\text{Al}/\text{SiO}_x/\text{SiO}_2/\text{TiO}_2$, wherein $0.03 \leq x < 0.95$ and $0.95 \leq z \leq 2.0$, especially $1.40 \leq z \leq 2.0$.

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7. An aqueous ink composition according to claim 1, wherein the platelet-shaped particles are gloss pigments comprising

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(a) a core substantially consisting of one or more silicon oxides (SiO_x layer) wherein the average molar ratio of oxygen to silicon is from 0.03 to < 0.95 ,

(b) optionally, an SiO_z layer, wherein $0.95 \leq z \leq 2.0$, especially $1.1 \leq y \leq 2.0$, more especially $1.4 \leq y \leq 2.0$, especially an SiO_2 layer,

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(c) optionally, a layer D^M having a transparency of from 50 to 100% and a complex refractive index $\tilde{N} = n + ik$ satisfying the condition $\sqrt{n^2 + k^2} \geq 1.5$ at the wavelength of maximum visible reflection of the particles, which is substantially composed of carbon, an organic compound, a metal, a dielectric or a mixture thereof, and which is either on top of the core or, if an SiO_z layer is present, is separated from the core by the SiO_z layer.

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8. An aqueous ink composition according to claim 7, wherein the gloss pigment has the following layer structure:

(b2) SiO_2 layer, especially SiO_2 layer,

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(b1) SiO_x core wherein $0.03 \leq x < 0.95$,

(b2) SiO_2 layer, especially SiO_2 layer, or

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- (b3) layer D^M, especially TiO₂,
(b2) SiO₂ layer, especially SiO₂ layer,
(b1) SiO_x core wherein $0.03 \leq x < 0.95$,
(b2) SiO₂ layer, especially SiO₂ layer,
5 (b3) layer D^M, especially TiO₂.

9. An aqueous ink composition according to claim 8, wherein the materials for the layer D^M are selected from metals, such as Ag, Al, Au, Cu, Co, Cr, Fe, Ge, Mo, Nb, Ni, Si, Ti, V, alloys thereof, inorganic or organic pigments or colorants, graphite and compounds
10 similar to graphite, metal oxides or sulfides, such as MoS₂, TiO₂, ZrO₂, SiO, SnO₂, GeO₂, ZnO, Al₂O₃, V₂O₅, Fe₂O₃, Cr₂O₃, PbTiO₃ or CuO, and mixtures thereof.

10. A process for printing a planar substrate according to the ink-jet printing method, which comprises printing the substrate with an aqueous ink composition according to any one
15 of claims 1 to 9.

11. A platelet-shaped aluminum particle comprising:
an aluminum layer having a top surface, a bottom surface, and at least one side
surface, and having a thickness of 30 nm to 60 nm, especially 30 to 50 nm; and a SiO₂
20 layer with $0.95 \leq z \leq 2.0$ on each of the top and bottom surfaces but not on the at least one side surface, having a thickness of 15 to 80 nm, especially 10 to 25 nm.